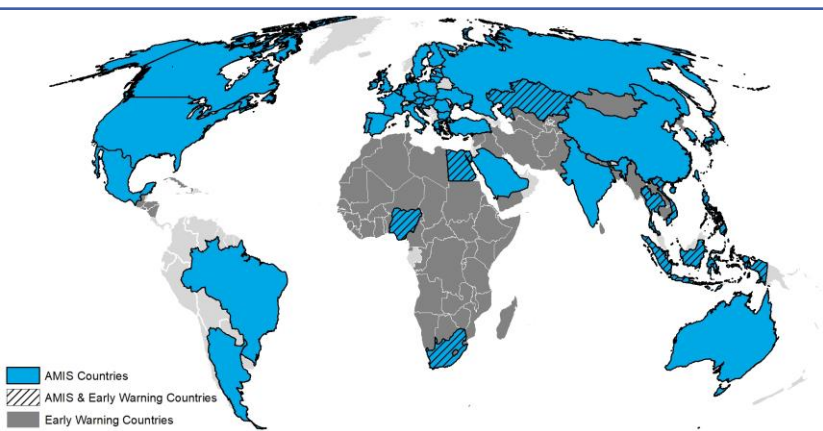




# Crop Monitor for AMIS

## Overview:

At the end of November, conditions are mixed for wheat, maize, rice, and soybeans. For wheat, dry conditions persist in Argentina, southern Europe, Ukraine, the southern Russian Federation, and the US. Maize harvesting wraps up in the northern hemisphere under poor conditions in parts of Europe and Ukraine. In the southern hemisphere, dry conditions remain an issue in Argentina. Rice conditions are mixed in parts of China, Thailand, and the Philippines. Soybean harvesting wraps up in the northern hemisphere. In the southern hemisphere, Argentina is sowing into dryness, while conditions are favourable in Brazil.

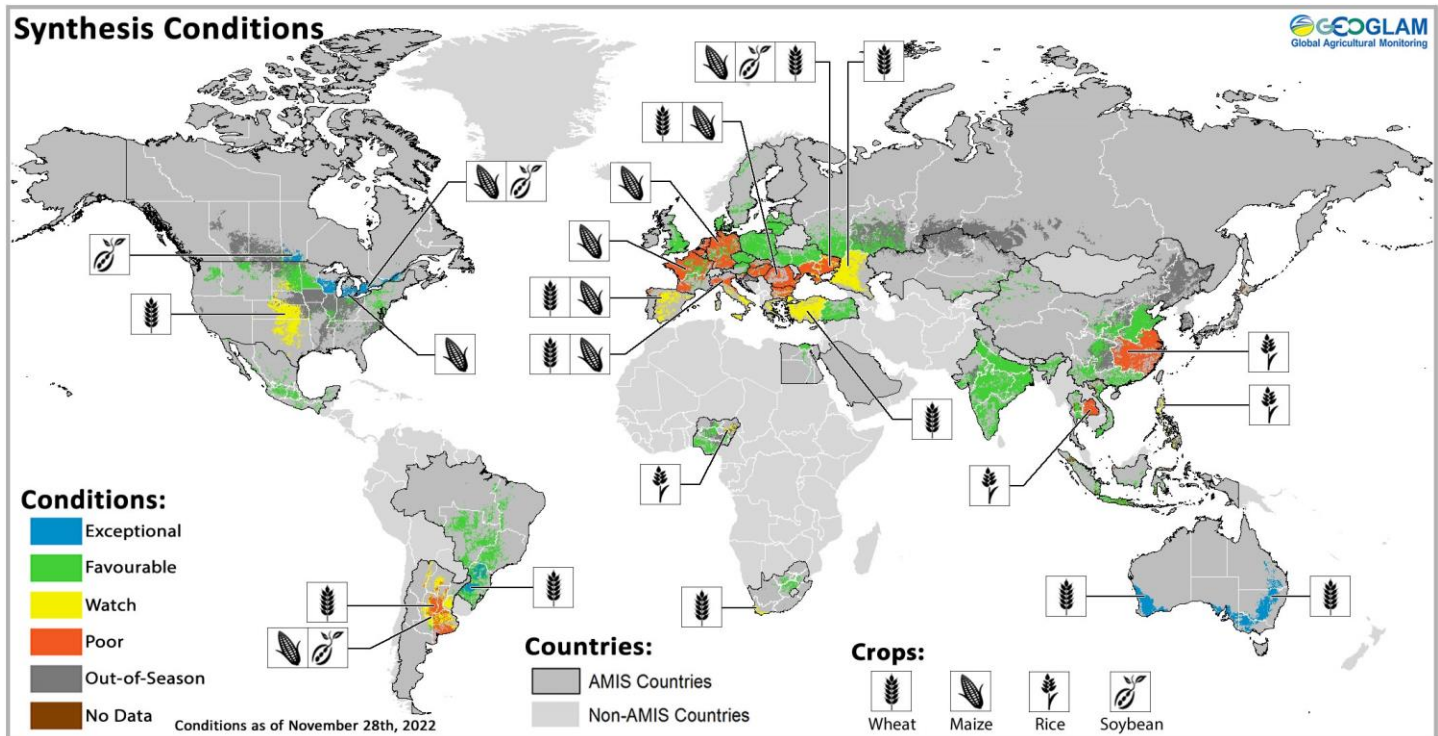


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*Assessment based on information as of November 28<sup>th</sup>*

## At a glance for AMIS countries (as of November 28th)



Crop condition map synthesizing information for all four AMIS crops as of November 28th. Crop conditions over the main growing areas for wheat, maize, rice, and soybean are based on a combination of national and regional crop analyst inputs along with earth observation data. **Crops that are in other than favourable conditions are displayed on the map with their crop symbol.**

### Crop Conditions at a Glance

**Wheat** - In the southern hemisphere, harvesting is picking up speed with exceptional yields in Australia and poor yields in Argentina. In the northern hemisphere, winter wheat is under mixed conditions going into winter dormancy.

**Maize** - In the northern hemisphere, harvesting is wrapping up with overall mixed conditions, while in India, sowing of the Rabi crop is beginning. In the southern hemisphere, sowing continues in Argentina, Brazil, and South Africa.

### Forecasts at a Glance

**Climate Influences** – La Niña conditions are currently present and will likely continue into early 2023 (76% chance for December to February and 59% chance for January to March). Negative Indian Ocean Dipole (IOD) conditions weakened during November, and neutral IOD conditions are forecast for December.

**Argentina** – In the short term (two weeks) above-average precipitation is expected this week followed by below-average precipitation next week. The long-term (three months) forecast shows likely below-average precipitation.

**Rice** - In China, harvesting of late rice is wrapping up while India is transitioning from Kharif rice to Rabi rice. In Southeast Asia, wet-season rice harvesting is at its peak in northern countries while Indonesia wraps up dry-season rice harvesting.

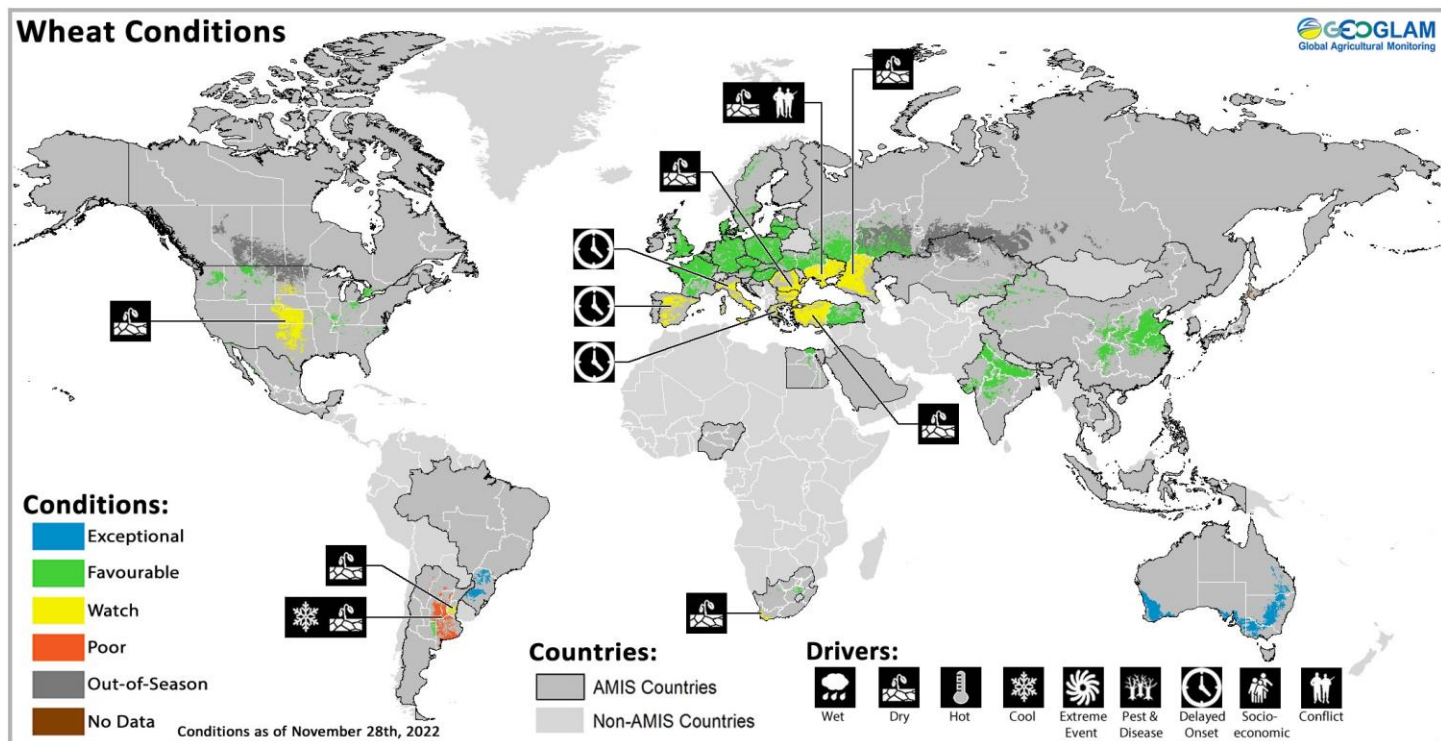
**Soybeans** - In the northern hemisphere, harvesting is wrapping up in Canada, India, and Ukraine. In the southern hemisphere, sowing is beginning in Argentina under dryness, while progressing in Brazil under favourable conditions.

**Brazil** – December precipitation is likely to be near average across the country. However, the long-term (three-month) forecast is for below-average rainfall across much of the central, south, southeast, and northeast regions.

**The United States** – Both the short-term (two weeks) forecast indicates likely below-average precipitation across most of the US, while the long-term forecast (three-month) indicates only above-average precipitation across the northern US.

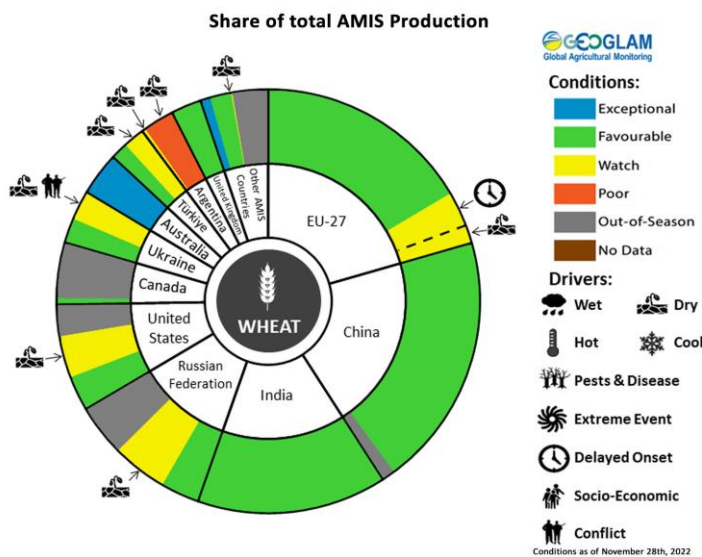
*While the Crop Monitor for AMIS is primarily focused on documenting crop conditions based on environmental factors, the war in Ukraine and in other conflict areas will very likely negatively impact the ability of the crop to be harvested.*

## Wheat Conditions for AMIS Countries



Wheat crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28<sup>th</sup>. Where crops are in other than favourable conditions the climatic drivers responsible for those conditions are displayed. Crop Season Specific Maps can be found in Appendix 2.

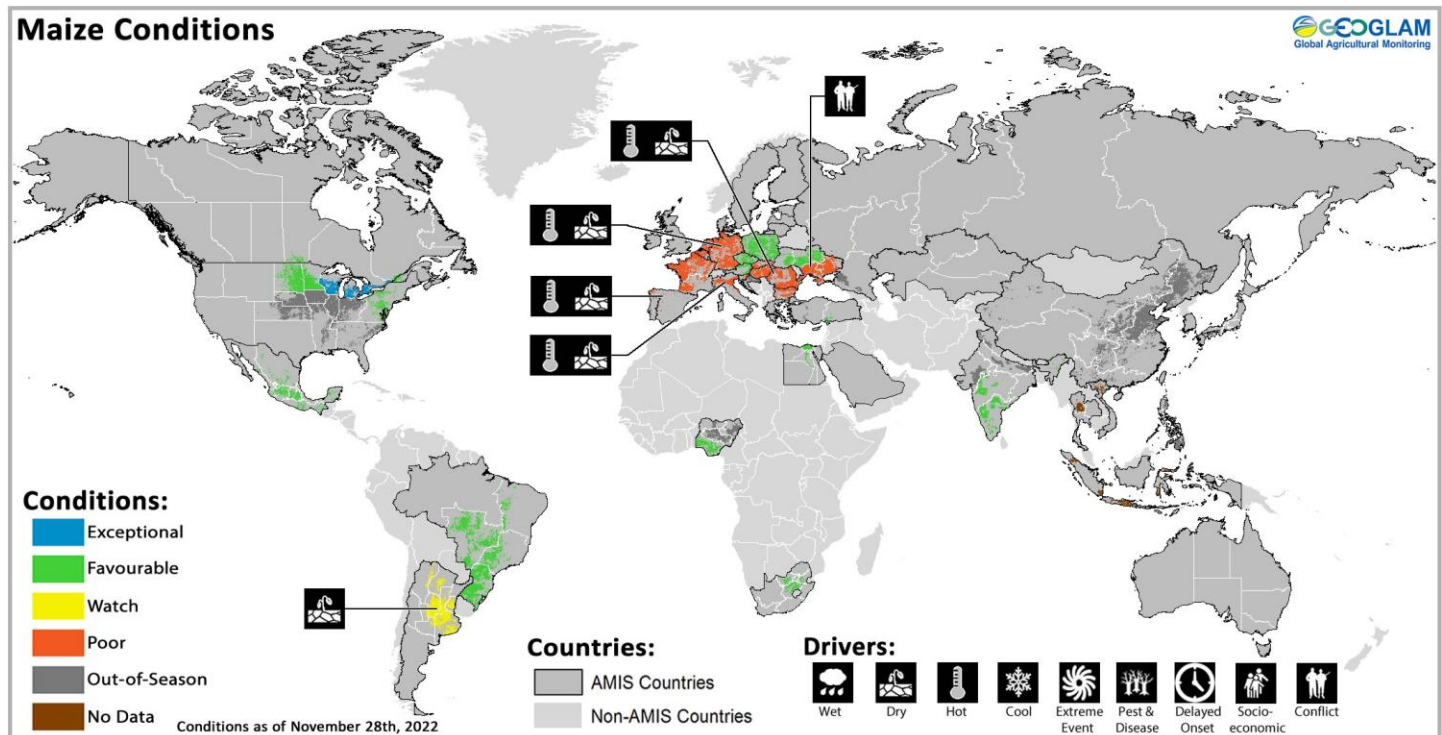
**Wheat:** In **Australia**, conditions are exceptional in most areas, despite ongoing flooding in parts of eastern Australia. Harvesting is well underway in northern and western cropping regions. In **Argentina**, yields are poor in most areas due to drought as harvesting is wrapping up in the north and beginning in the main producing areas; many plots have been used as forage. In the **EU**, conditions are generally favourable, albeit with delayed sowing in the southern countries due to low soil moisture levels. In the **UK**, conditions are favourable. In **Türkiye**, sowing is wrapping up under dry conditions in the west. In **Ukraine**, conditions are generally favourable, albeit with persistent dryness in Odessa and disruptions/security concerns in the southern and eastern regions due to the ongoing war. In the **Russian Federation**, sowing is wrapping up under generally favourable conditions except for dryness in the southern Caucasus. In **China**, winter wheat is under favourable conditions with ample soil moisture. In **India**, sowing is beginning in the northern and central states. In the **US**, dry conditions across the Great Plains from South Dakota to Texas continues to be a concern going into winter. In **Canada**, winter wheat sowing is complete and under favourable conditions going into winter dormancy.



For detailed description of the pie chart please see box on page 6.

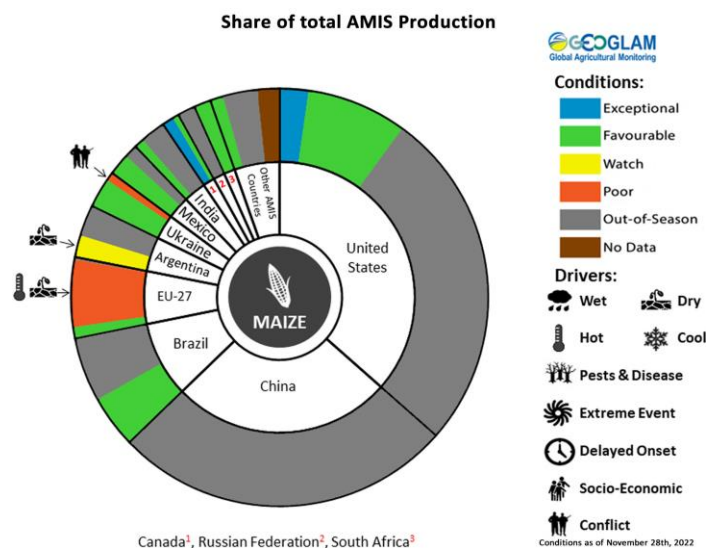
\* Assessment based on information as of October 28<sup>th</sup>

## Maize Conditions for AMIS Countries



Maize crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28<sup>th</sup>. Where crops are in other than favourable conditions the climatic drivers responsible for those conditions are displayed. Crop Season Specific Maps can be found in Appendix 2.

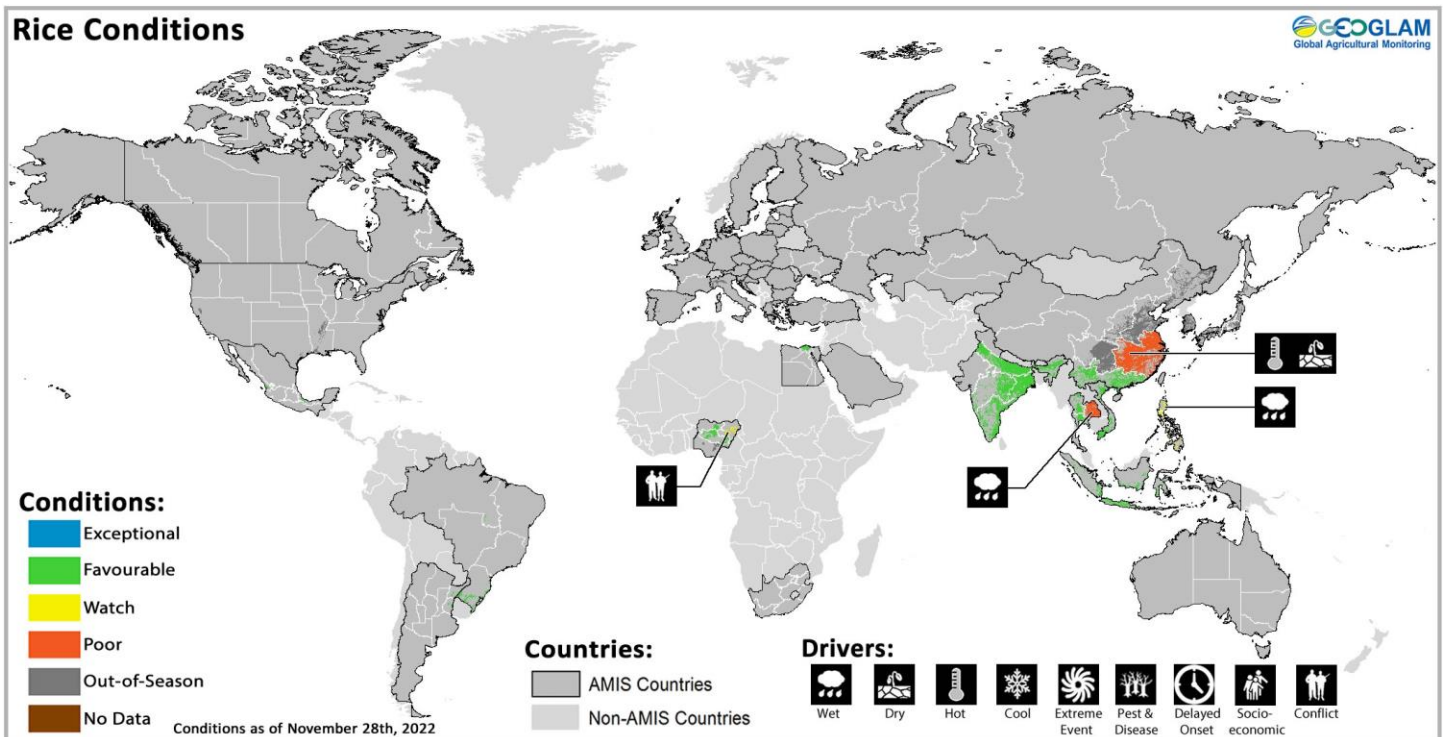
**Maize:** In the **US**, harvesting is wrapping up in the north under exceptional conditions in Michigan and Wisconsin. In **Canada**, harvesting is wrapping up under exceptional conditions in Ontario. In **Mexico**, harvesting is ongoing for the spring-summer season (larger season) under favourable conditions. In the **EU**, harvesting is wrapping up with below-average yields across most of western and southern Europe due to droughts and heatwaves. In **Ukraine**, harvesting slowly continues with just over half the crop collected so far, so many crops will likely be harvested during the winter or early spring. In **India**, sowing of the Rabi crop is beginning under favourable conditions. In **Brazil**, sowing of the spring-planted crop (smaller) is continuing under favourable conditions with a slight reduction in the total sown area expected compared to last year. In **Argentina**, sowing of the early-planted crop (typically larger season) continues at a slow pace due to dryness. Recent rains have improved conditions in some areas, but much of the intended sown area will likely shift to the later-planted crop (typically smaller season) in hopes of better soil moisture conditions. In **South Africa**, ample rainfall since mid-October has supported sowing and early development.



For detailed description of the pie chart please see box on page 6.

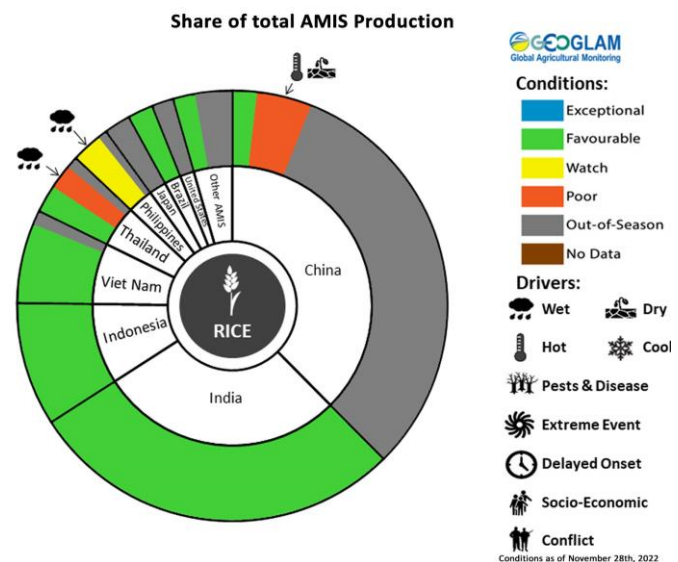
\* Assessment based on information as of November 28<sup>th</sup>

## Rice Conditions for AMIS Countries



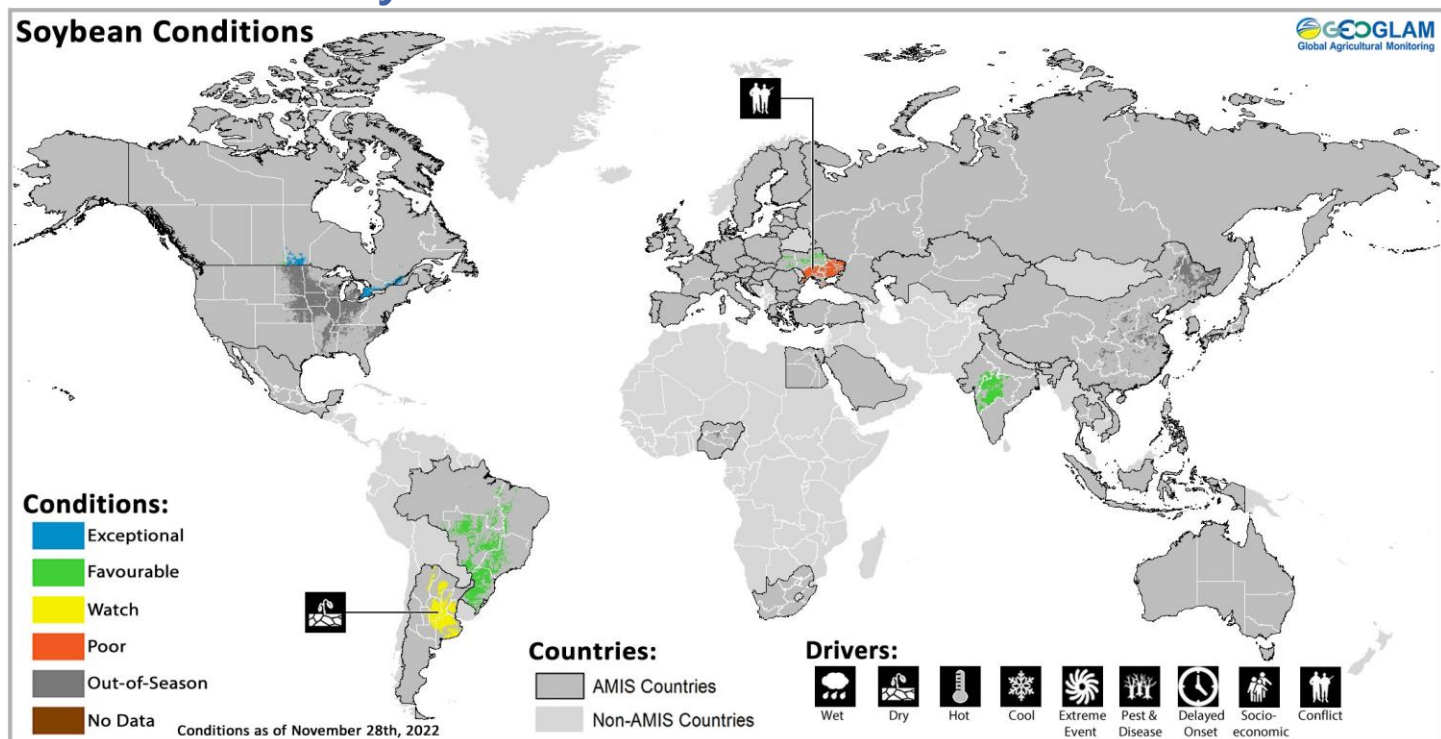
Rice crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28<sup>th</sup>. Where crops are in other than favourable conditions the climatic drivers responsible for those conditions are displayed. Crop Season Specific Maps can be found in Appendix 2.

**Rice:** In **China**, harvesting is wrapping up for late rice under mixed conditions due to persistent extreme heat and dry weather during the fertility period in the Yangtze River Basin. In **India**, harvesting of the Kharif crop is wrapping up in the southern and eastern states, while sowing is beginning for the Rabi crop. In **Indonesia**, harvesting of dry-season rice is wrapping up while the sowing of wet-season rice continues, albeit at a slower pace than last year. In **Viet Nam**, harvesting of wet-season rice is ongoing in the north. In the south, harvesting continues for the other wet-season rice (autumn-winter rice and seasonal rice), while sowing of dry-season rice begins in the Mekong Delta. In **Thailand**, harvesting of wet-season rice is ongoing under mixed conditions due to flooding in October that caused extensive damage in the Northeastern region. In the **Philippines**, wet-season rice is harvesting under mixed conditions as the passage of multiple tropical cyclones caused severe damage to crops in parts of Luzon and some parts of Visayas and Mindanao. In **Brazil**, sowing is wrapping up with a reduction in the total sown area.



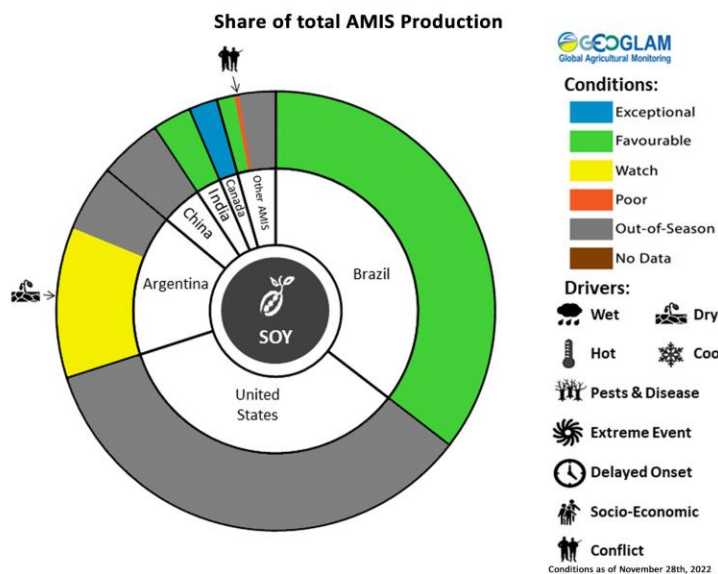
For detailed description of the pie chart please see box on page 6.

## Soybean Conditions for AMIS Countries



Soybean crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28<sup>th</sup>. Where crops are in other than favourable conditions the climatic drivers responsible for those conditions are displayed. Crop Season Specific Maps can be found in Appendix 2.

**Soybeans:** In **Canada**, harvesting is wrapping up under exceptional conditions in Ontario, Manitoba, and Quebec. In **Ukraine**, harvesting is wrapping up under generally favourable conditions outside of the occupied territories. In **India**, harvesting is wrapping up in the major producing states under favourable conditions. In **Brazil**, sowing is progressing under favourable conditions despite earlier delays due to adverse weather. An increase in total sown area is expected compared to last year. In **Argentina**, sowing is beginning in the main producing areas of Buenos Aires, Entre Ríos, Santa Fe, and Córdoba, as recent rains improved soil moisture conditions. However, the lack of surface soil moisture might impact the sowing progress, with southern Santa Fe and northern Buenos Aires being the most affected regions.



For detailed description of the pie chart please see box below.

**Information on crop conditions in non-AMIS countries can be found in the [GEGLAM Crop Monitor for Early Warning](#), published December 7<sup>th</sup>**

**Pie chart description:** Each slice represents a country's share of total AMIS production (5-year average). Main producing countries (representing 95 percent of production) are shown individually, with the remaining 5 percent grouped into the "Other AMIS Countries" category. The proportion within each national slice is coloured according to the crop conditions within a specific growing area; grey indicates that the respective area is out of season. Sections within each slide are weighted by the sub-national production statistics (5-year average) of the respective country. The section within each national slice also accounts for multiple cropping seasons (i.e., spring and winter wheat). When conditions are other than 'favourable', icons are added that provide information on the key climatic drivers affecting conditions.

\* Assessment based on information as of November 28<sup>th</sup>

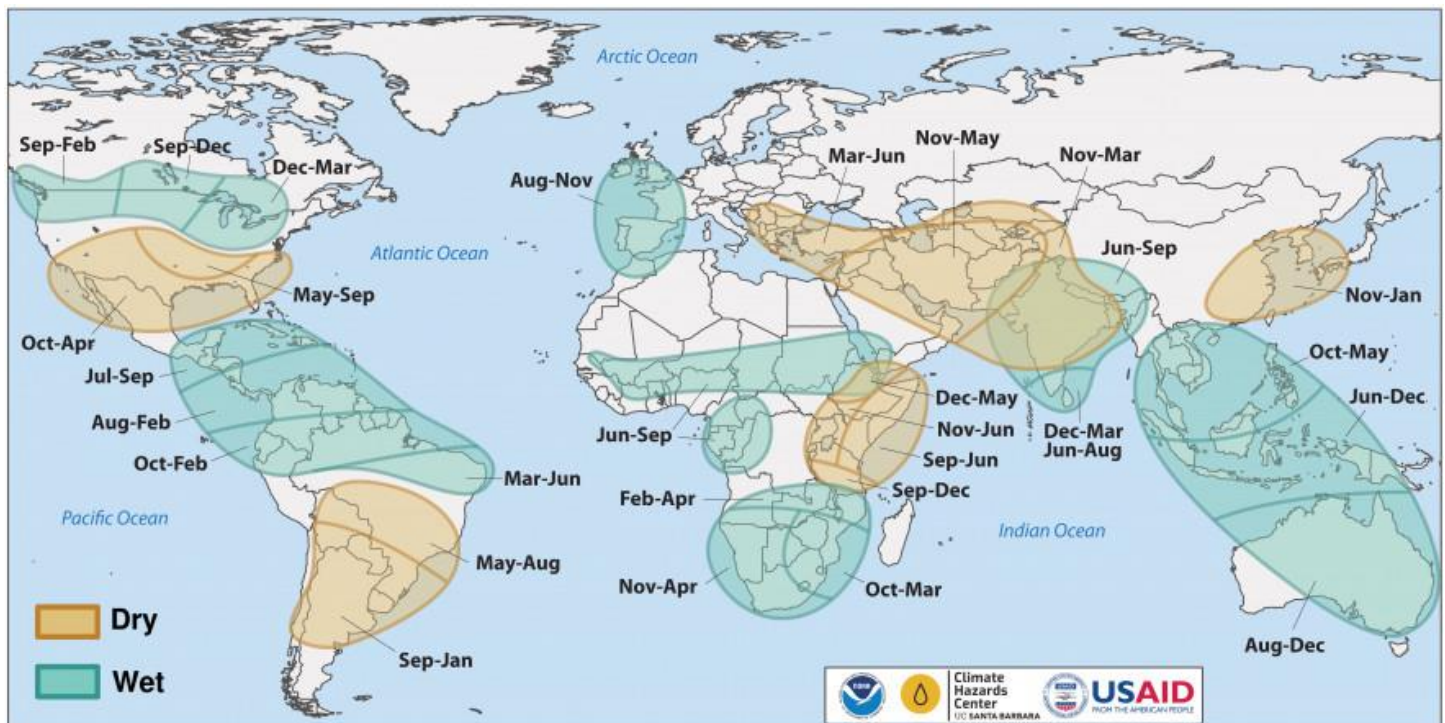
## Climate Influences: La Niña Advisory and a Negative Indian Ocean Dipole

The El Niño-Southern Oscillation (ENSO) is currently in the La Niña phase. La Niña conditions will likely continue into early 2023 (76% chance for December to February and 59% chance for January to March), according to the IRI/CPC. Neutral ENSO conditions are likely after that.

Negative Indian Ocean Dipole (IOD) conditions weakened during November, and neutral IOD conditions are forecast for December, signifying the end of the negative IOD event.

Persistent La Niña conditions since late 2020 have produced high-impact, multi-year droughts in eastern East Africa, southern South America, Central and Southern Asia, and southern North America. The forecast continuation of La Niña for several more months raises concerns about continued dry conditions in these areas. For [eastern East Africa](#), poor spring rains often follow fall La Niñas, as La Niña-like sea surface temperature gradients can linger after La Niña strength wanes. Recovery from severe drought can be a lengthy process, in which several seasons of improved precipitation may be needed to replenish reservoirs and groundwater, and negative socio-economic impacts can have long-lasting effects in food-insecure regions.

Source: UCSB Climate Hazards Center

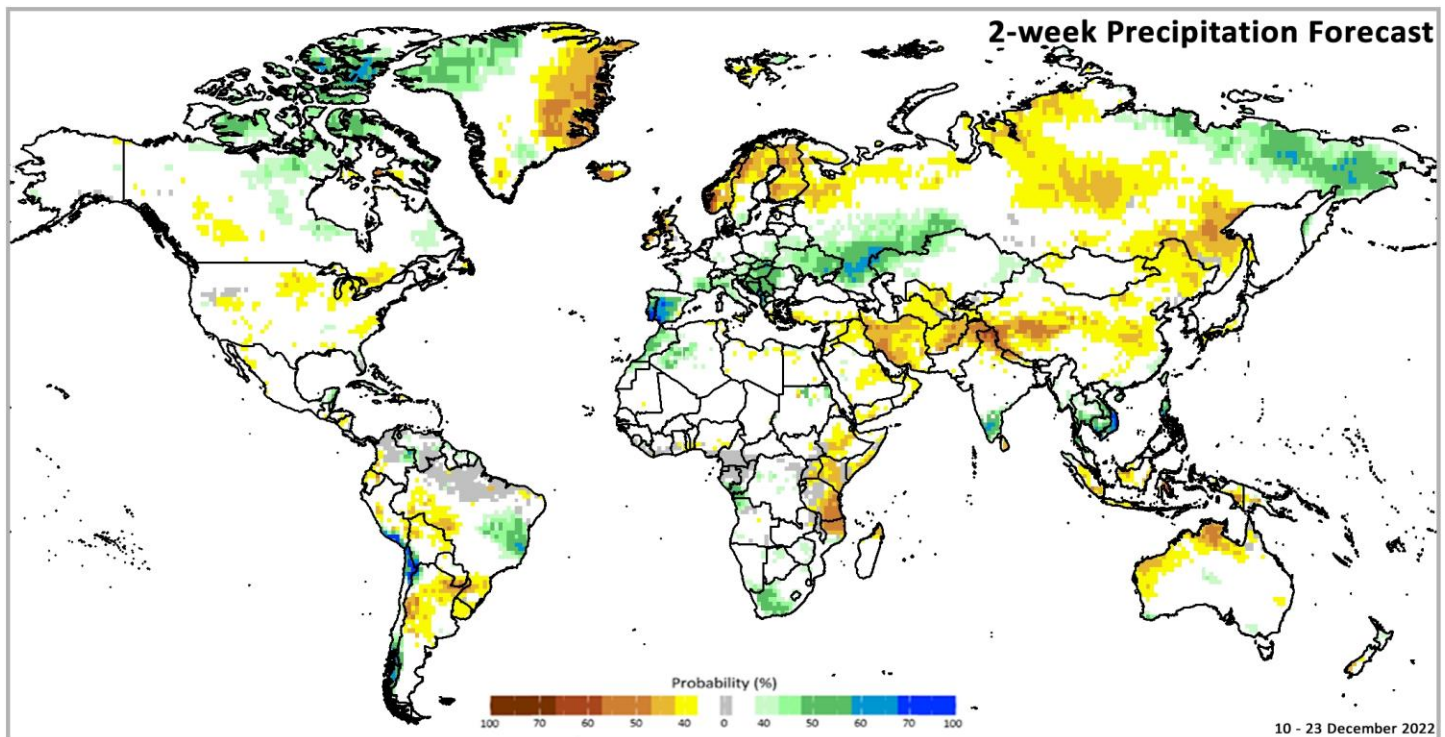


Location and timing of likely above- and below-average precipitation related to La Niña events. Based upon observed precipitation during 21 La Niña events since 1950, wet and dry correspond to a statistically significant increase in the frequency of precipitation in the upper and lower thirds of historical values, respectively. Statistical significance at the 95% level is based on the resampling of precipitation during neutral El Niño-Southern Oscillation conditions. Source: [FEWS NET & NOAA & CHC](#)

## Global Two-week Forecast of Areas with Above or Below-Average Precipitation

The two-week forecast (Figure 1) indicates a likelihood of above-average rainfall over southern Peru, northern Chile, eastern Brazil, Portugal, Spain, southern France, Italy, Austria, Czechia, Slovakia, Hungary, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Albania, Kosovo, Serbia, western Romania, eastern Poland, southern Belarus, Moldova, Ukraine, southern and western Russian Federation, northwestern Kazakhstan, Morocco, southern Republic of Congo, northwest Angola, western South Africa, southern India, southern Thailand, Cambodia, southern Laos, southern Viet Nam, and the Philippines.

There is also a likelihood of below-average rainfall over the Great Lakes region of Canada and the US, northern Ecuador, western and southern Brazil, northern Bolivia, southern Paraguay, Uruguay, central Argentina, Norway, Finland, southern Türkiye, Iraq, Iran, Yemen, Ethiopia, Kenya, Somalia, southeast Tanzania, northern Mozambique, northern Madagascar, Uzbekistan, Turkmenistan, Tajikistan, Afghanistan, northern Pakistan, northwest India, western Nepal, China, eastern Russian Federation, Indonesia, and northern Australia.



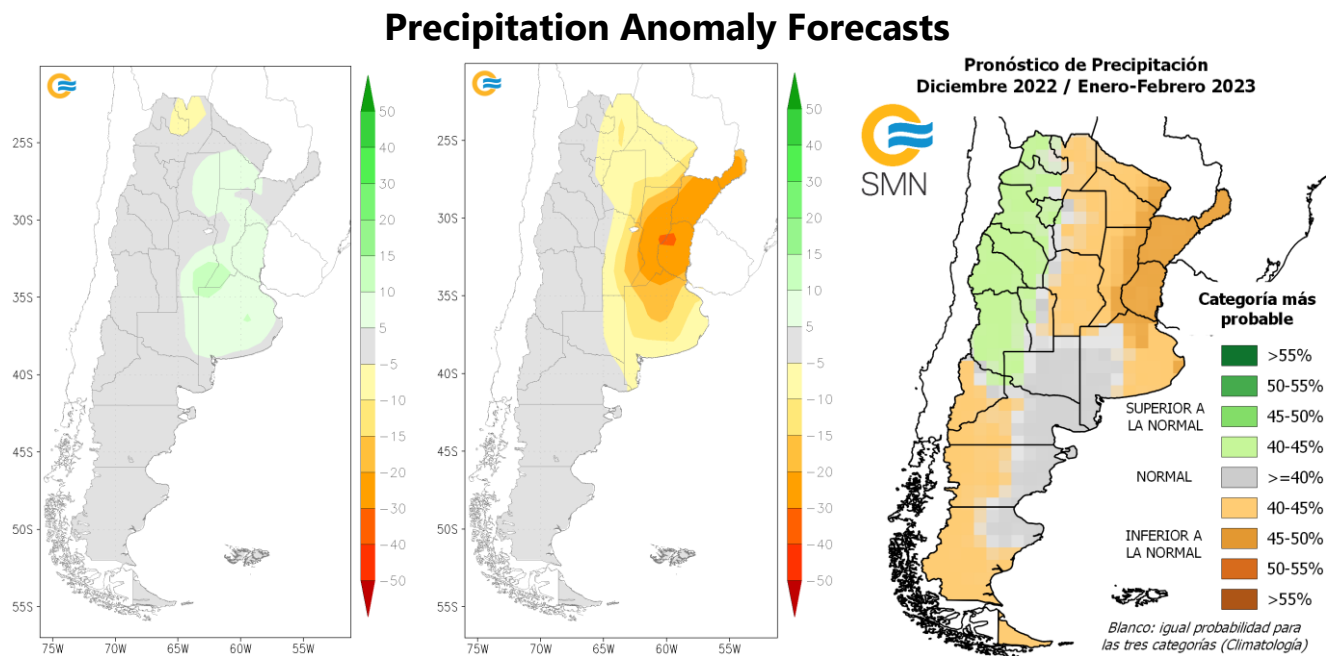
IRI SubX Precipitation Biweekly Probability Forecast for 10 – 23 December 2022, issued on December 2nd, 2022. The forecast is based on statistically calibrated tercile category forecasts from three SubX models. Source: [IRI Subseasonal Forecasts Maproom](#)



## Argentina Outlook

The December 6 – 12<sup>th</sup> precipitation forecast anomaly (left) indicates slightly above-average rainfall over Buenos Aires, eastern La Pampa, southern Cordoba, Santa Fe, Entre Rios, eastern Santiago del Estero, and Chaco. During the same period, temperatures are likely to be above-average over all of the main agricultural areas. The December 13 – 19<sup>th</sup> precipitation forecast anomaly (center) shows likely below-average precipitation over Buenos Aires, eastern La Pampa, Cordoba, Santa Fe, Entre Ríos, Corrientes, Misiones, Santiago del Estero, and Chaco. During the same period, temperatures are likely to be average across most of the country.

The long-term December-January-February 2022/2023 forecast (right) shows likely below-average precipitation across much of the main agricultural areas except for western Buenos Aires, and La Pampa. During the same period, temperatures are likely to be above-average across Cordoba, Santa Fe, Entre Rios, San Luis, La Pampa, and Buenos Aires.



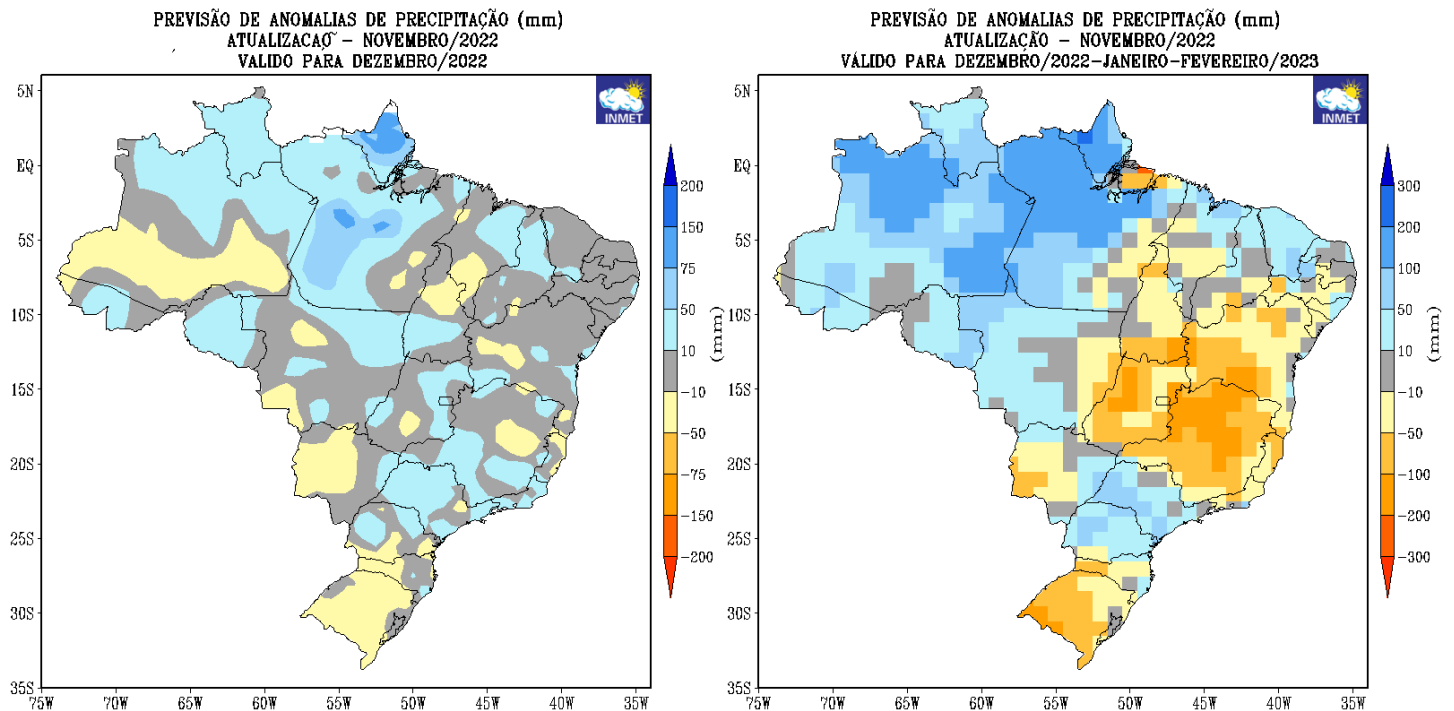
**Left:** December 6 – 12, 2022 forecast precipitation anomaly in mm. **Center** December 13 – 19, 2022 forecast precipitation anomaly in mm. Images from the [National Meteorological Service of Argentina](#). **Right:** December-January-February 2022/2023 forecast rainfall anomaly. Image from the [National Meteorological Service of Argentina](#).

## Brazil Outlook

The December precipitation anomaly forecast (left) indicates generally average to near-average precipitation across most of the country. During the same period, temperatures are likely to be above-average across the Central-West and Southeast regions of the country.

The long-term November-December-January 2022/2023 forecast (right) indicates likely below-average precipitation across Tocantins, Goiás, Bahia, Minas Gerais, Espírito Santo, Rio de Janeiro, southwest Mato Grosso do Sul, western Santa Catarina, and Rio Grande do Sul. During the same period, temperatures are likely to be slightly above-average across the eastern parts of the country and slightly below-average across the northwest portion of the country.

### December and 3-month Precipitation Forecast Anomalies



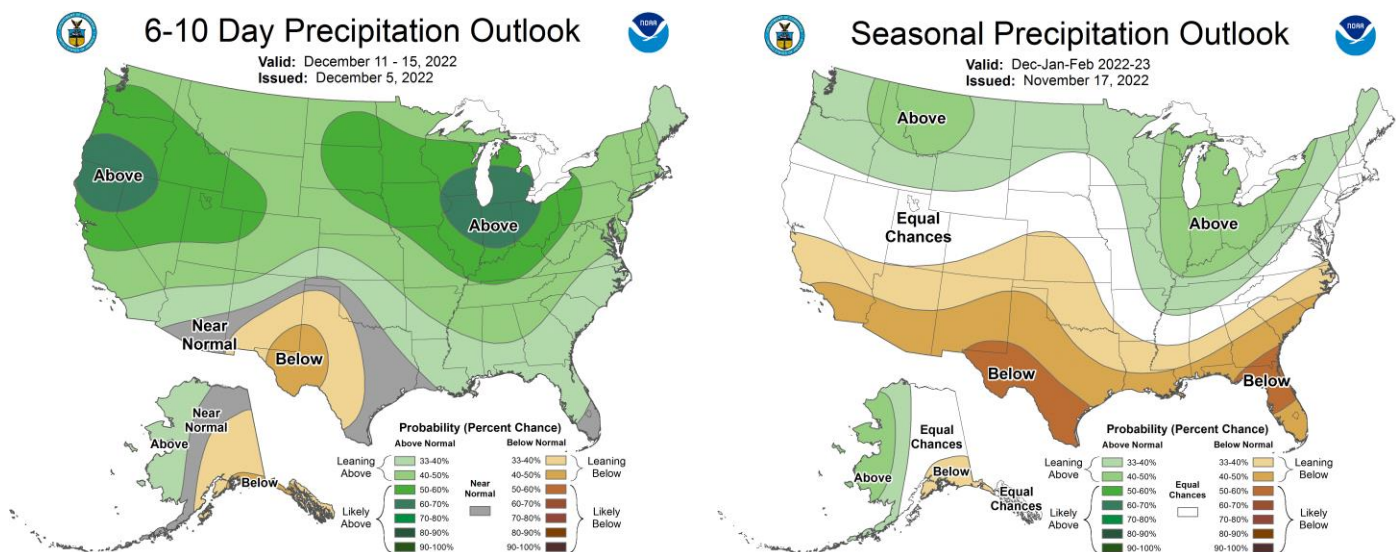
**Left:** December 2022 precipitation anomaly forecast, issued in November 2022. **Right:** December-January-February 2022/2023 precipitation anomaly forecast, issued in November 2022. Images from the [National Institute of Meteorology](https://www.inmet.gov.br/).

## United States Outlook

The December 11-15<sup>th</sup> outlook indicates there is the possibility of above-average precipitation across most of the continental US, with the highest likelihood in the southern Great Lakes region and the southern Pacific Northwest. There is possible below-average precipitation in western Texas and southeastern New Mexico. During the same time, temperatures are likely to be above-average across the eastern US, while below average across the western US.

For the longer-term seasonal December-January-February (DJF) 2022-2023 outlook, below-average precipitation is possible across the entire southern part of the country and reaching up into the Central Great Plains. Conversely, above-average precipitation is likely in the Pacific Northwest and the Great Lakes region. During the same period, temperatures are likely to be above-average in the southeast and extend across the southern US and the entire East Coast. Temperatures are also likely to be below-average across the northern Great Plains across to the Pacific Northwest.

### Short-term and the December-January-February 2022/2023 Precipitation Outlooks



The official 6 - 10 precipitation outlook issued on December 5th, 2022, and the extended December-January-February outlook issued on November 17th, 2022, from NOAA/National Weather Service, National Centers for Environmental Predictions, and Climate Prediction Center. Images from <https://www.cpc.ncep.noaa.gov/products/forecasts/>.

Source: NOAA Climate Prediction Center

\* Assessment based on information as of November 28<sup>th</sup>

## Appendix 1: Terminology & Definitions

### Crop Conditions:

**Exceptional:** Conditions are much better than average\* at the time of reporting. This label is only used during the grain-filling through harvest stages.

**Favourable:** Conditions range from slightly lower to slightly better than average\* at reporting time.

**Watch:** Conditions are not far from average\* but there is a potential risk to final production. The crop can still recover to average or near average conditions if the ground situation improves. This label is only used during the planting-early vegetative and the vegetative-reproductive stages.

**Poor:** Crop conditions are well below average\*. Crop yields are likely to be more than 5% below average. This is only used when conditions are not likely to be able to recover, and an impact on production is likely.

**Out of Season:** Crops are not currently planted or in development during this time.

**No Data:** No reliable source of data is available at this time.

\*"Average" refers to the average conditions over the past 5 years.

### Conditions:

	Exceptional
	Favourable
	Watch
	Poor
	Out-of-Season
	No Data

### Drivers:

These represent the key climatic drivers that are having an impact on crop condition status. They result in production impacts and can act as either positive or negative drivers of crop conditions.

**Wet:** Wetter than average (includes water logging and floods).

**Dry:** Drier than average.

**Hot:** Hotter than average.

**Cool:** Cooler than average or risk of frost damage.

**Extreme Events:** Catch-all for all other climate risks (i.e., hurricane, typhoon, frost, hail, winter kill, wind damage, etc.). When this category is used the analyst will also specify the type of extreme event in the text.

**Delayed-Onset:** Late start of the season

	Wet
	Dry
	Hot
	Cool
	Extreme Event
	Delayed-Onset

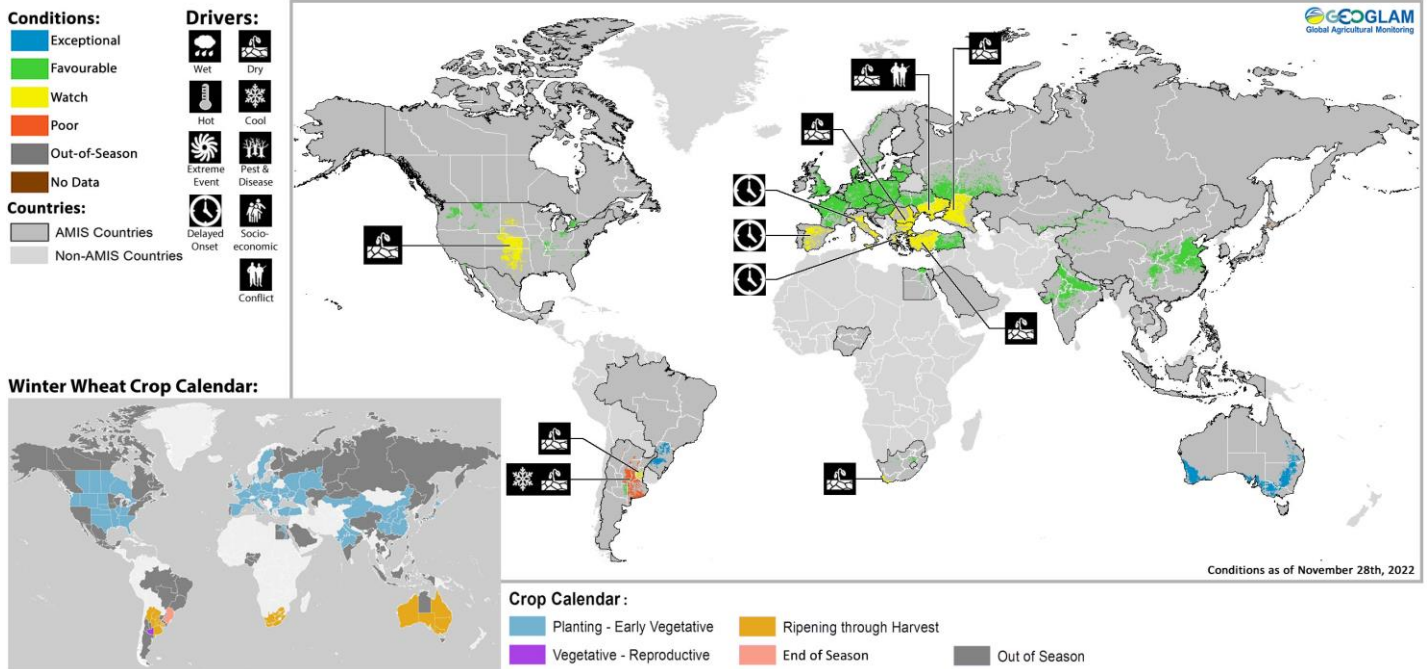
### Crop Season Nomenclature:

In countries that contain multiple cropping seasons for the same crop, the following chart identifies the national season name associated with each crop season within the Crop Monitor. Within the Crop Monitor for AMIS countries, the larger producing season (most recent 5 years) has been assigned to the first season.

Crop Season Nomenclature				
Country	Crop	Season 1 Name	Season 2 Name	Season 3 Name
Argentina	Soybean	Spring-planted	Summer-planted	
Brazil	Maize	Summer-planted (larger producing season)	Spring-planted (smaller producing season)	
Canada	Wheat	Winter-planted	Spring-planted	
China	Maize	Spring-planted	Summer-planted	
China	Rice	Single-season	Late-season	Early-season
China	Wheat	Winter-planted	Spring-planted	
Egypt	Rice	Summer-planted	Nili season (Nile Flood)	
India	Maize	Kharif	Rabi	
India	Rice	Kharif	Rabi	
Indonesia	Rice	Wet-season	Dry-season	
Mexico	Maize	Spring-planted	Autumn-planted	
Nigeria	Maize	Main-season	Short-season	
Nigeria	Rice	Main-season	Off-season	
Philippines	Rice	Wet-season	Dry-season	
Russian Federation	Wheat	Winter-planted	Spring-planted	
Thailand	Rice	Wet-season	Dry-season	
United States	Wheat	Winter-planted	Spring-planted	
Viet Nam	Rice	Wet-season	Dry-season	

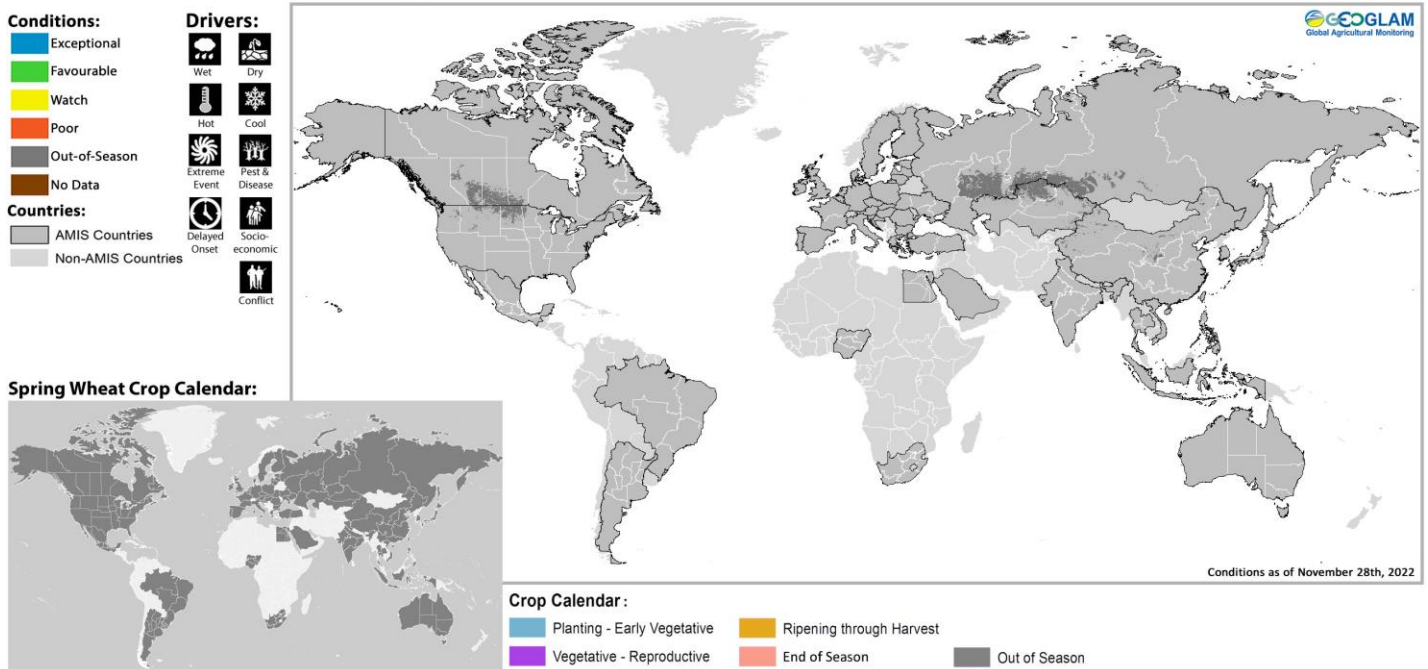
## Appendix 2: Crop Season-Specific Maps

### Winter Planted Wheat Conditions for AMIS Countries



Winter wheat crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

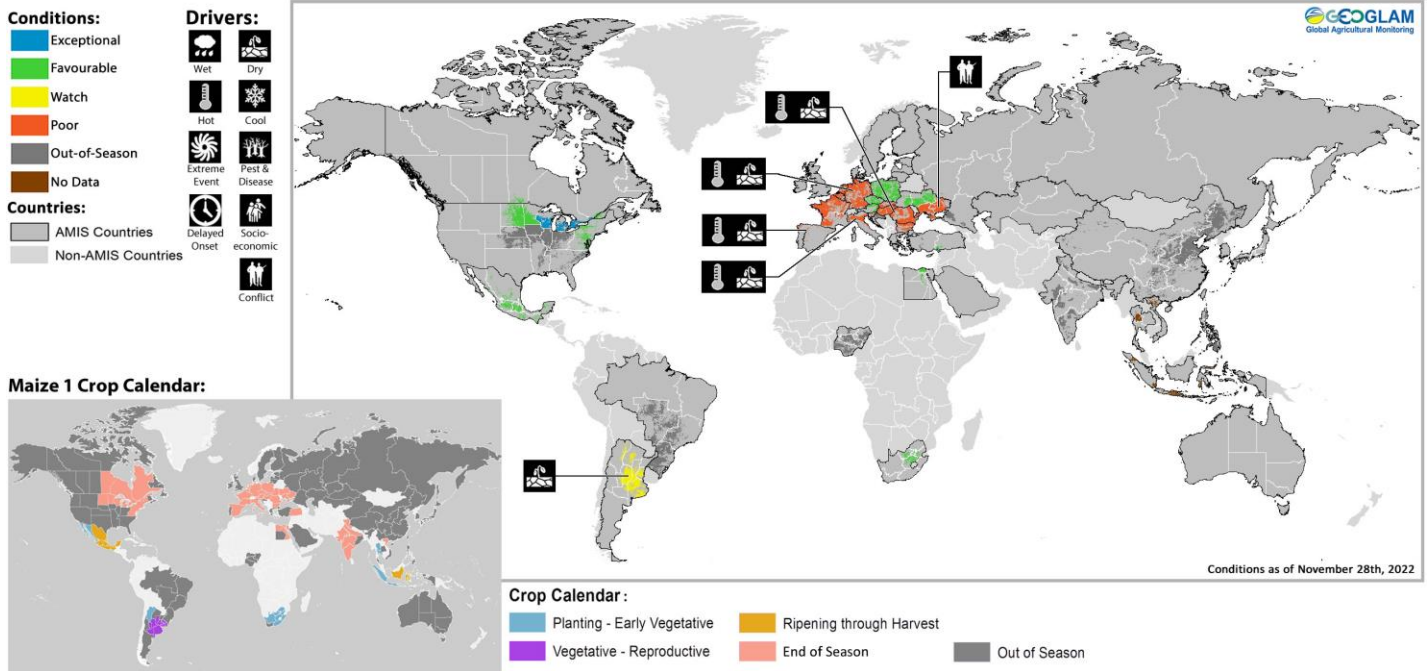
### Spring Planted Wheat Conditions for AMIS Countries



Spring wheat crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

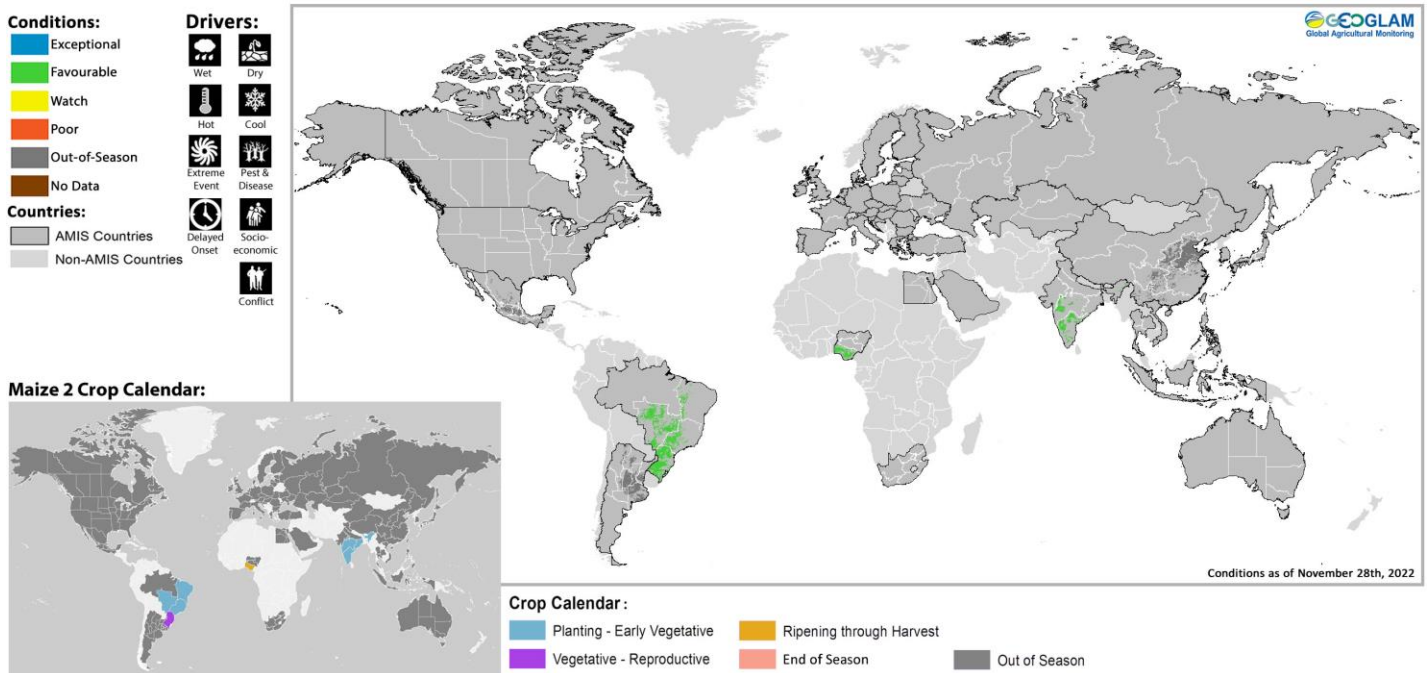
\* Assessment based on information as of November 28th

## Maize 1 Conditions for AMIS Countries



Maize 1 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

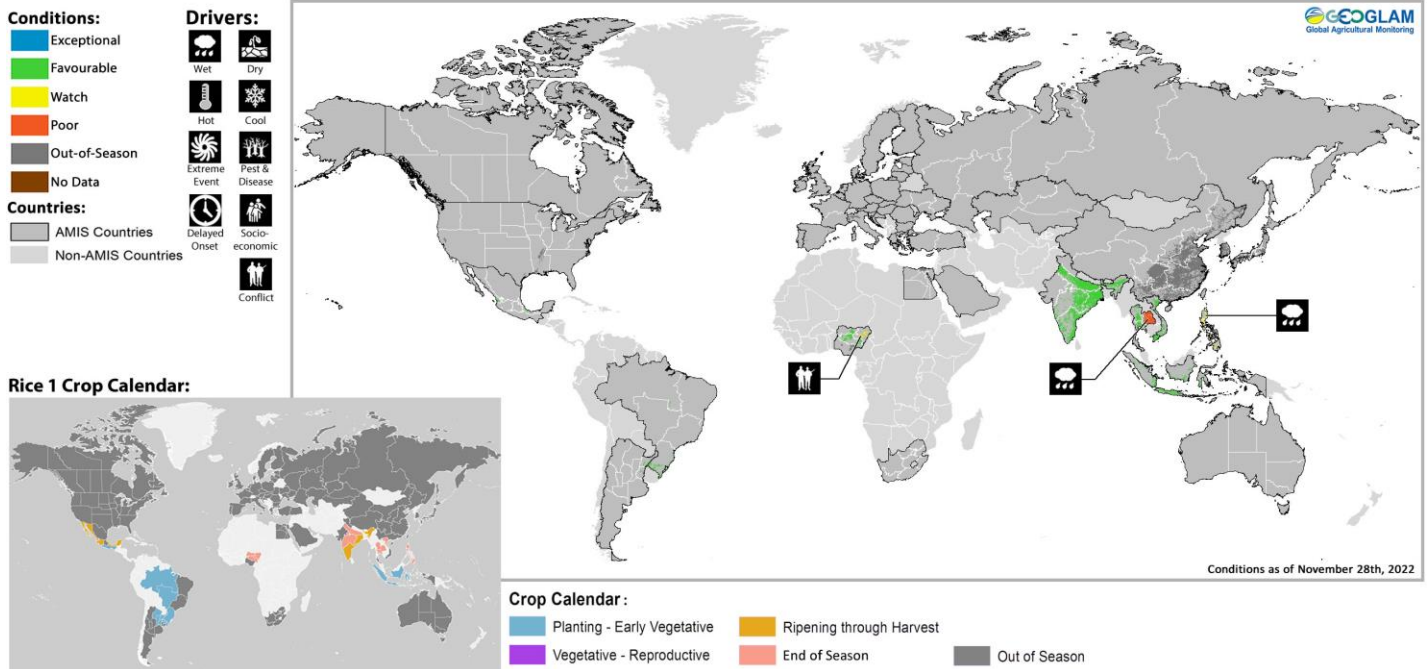
## Maize 2 Conditions for AMIS Countries



Maize 2 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

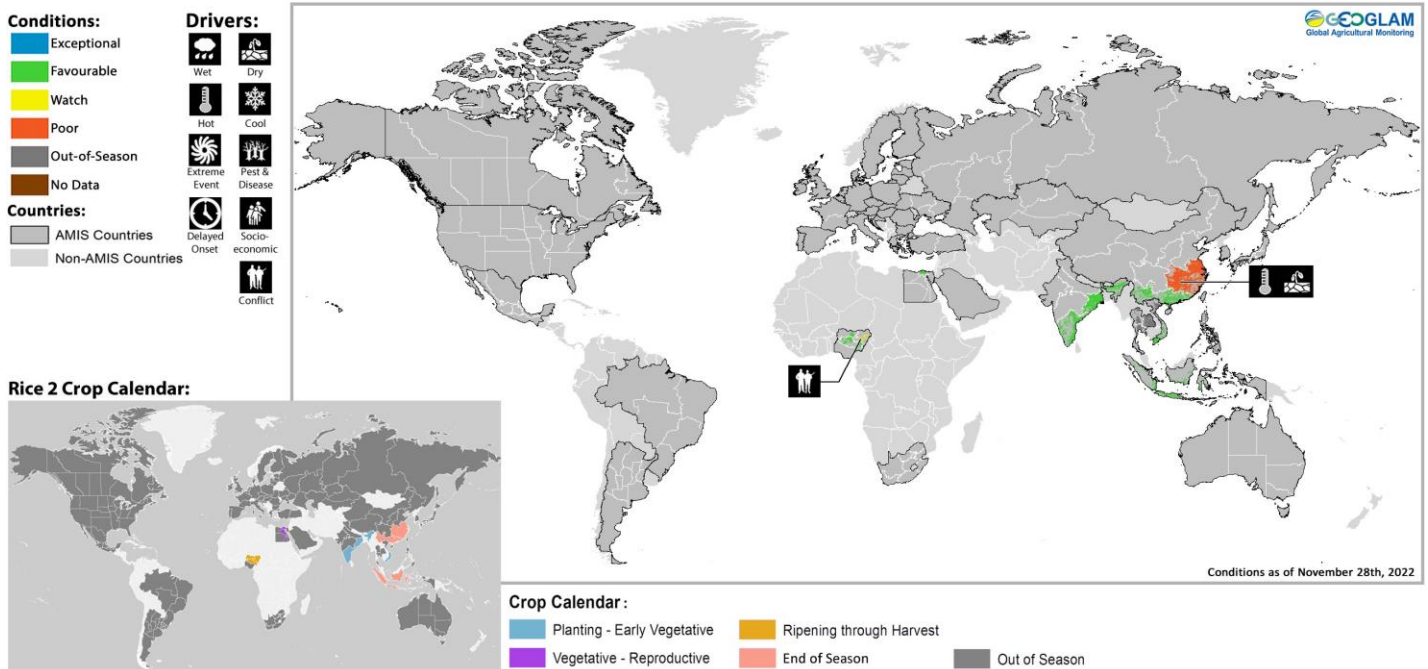
\* Assessment based on information as of November 28th

## Rice 1 Conditions for AMIS Countries



Rice 1 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

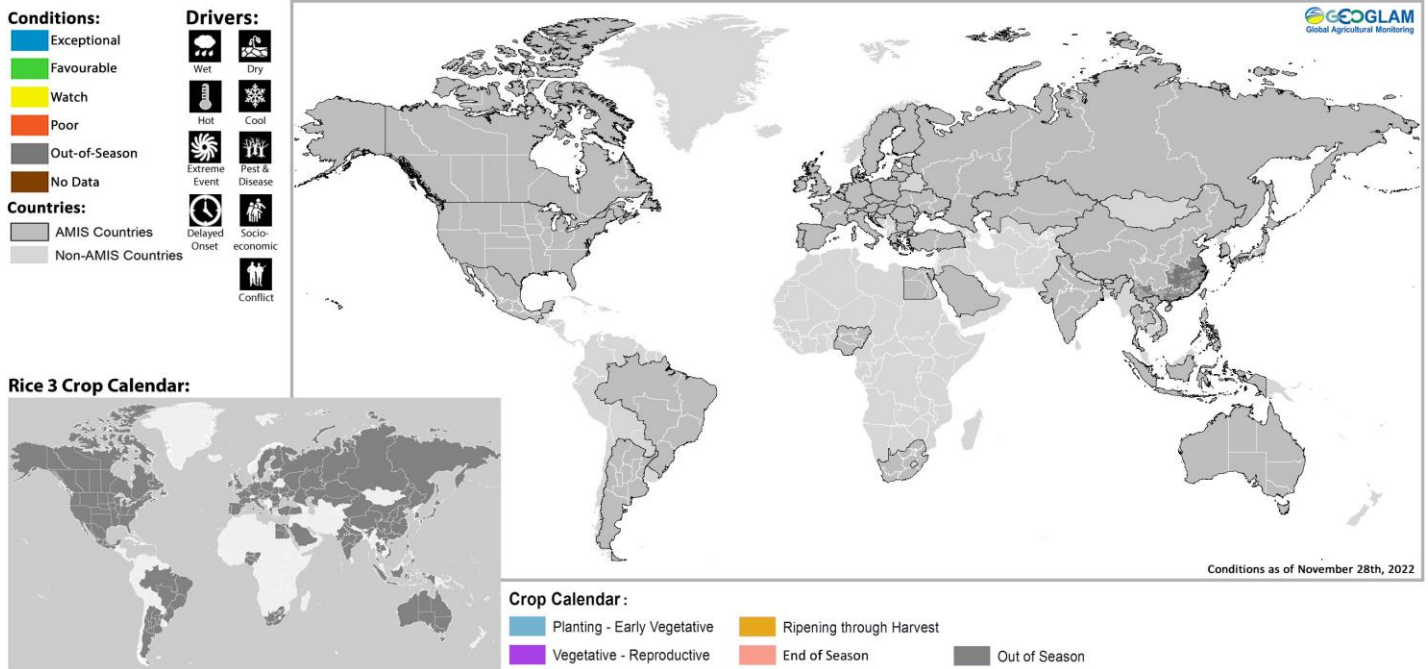
## Rice 2 Conditions for AMIS Countries



Rice 2 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

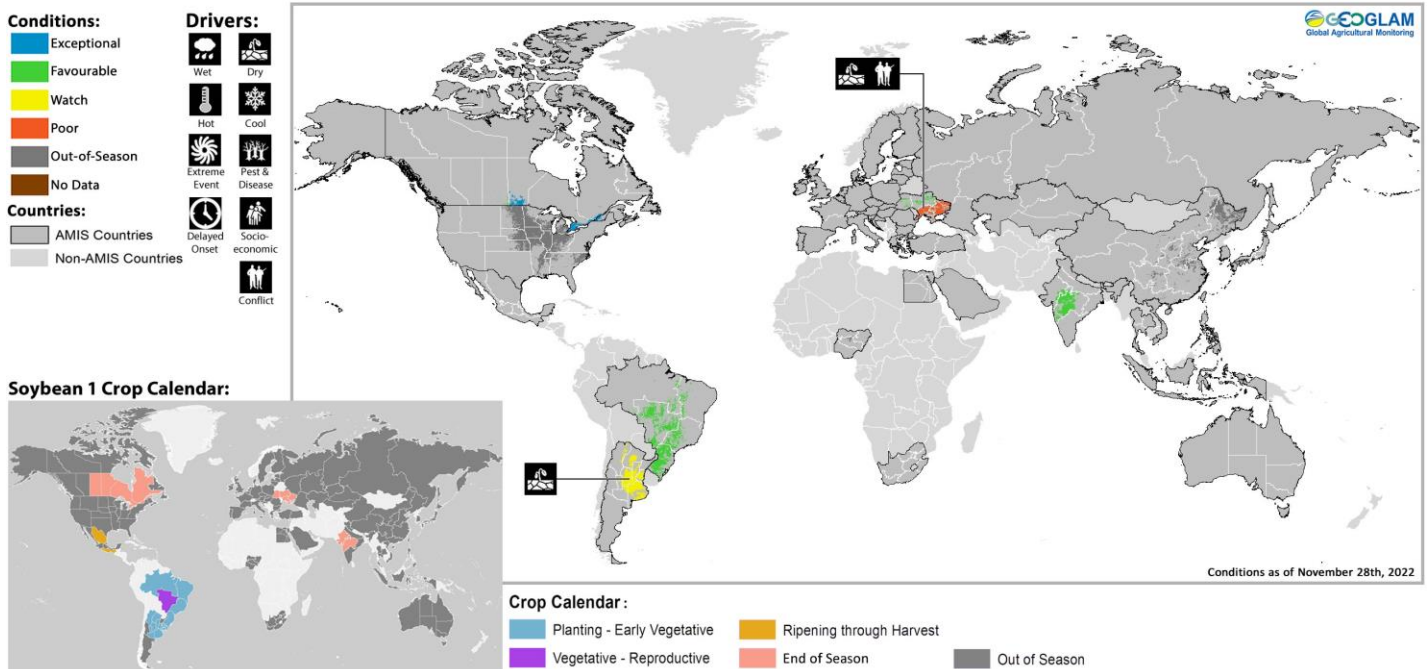
\* Assessment based on information as of November 28th

## Rice 3 Conditions for AMIS Countries



Rice 3 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

## Soybean 1 Conditions for AMIS Countries

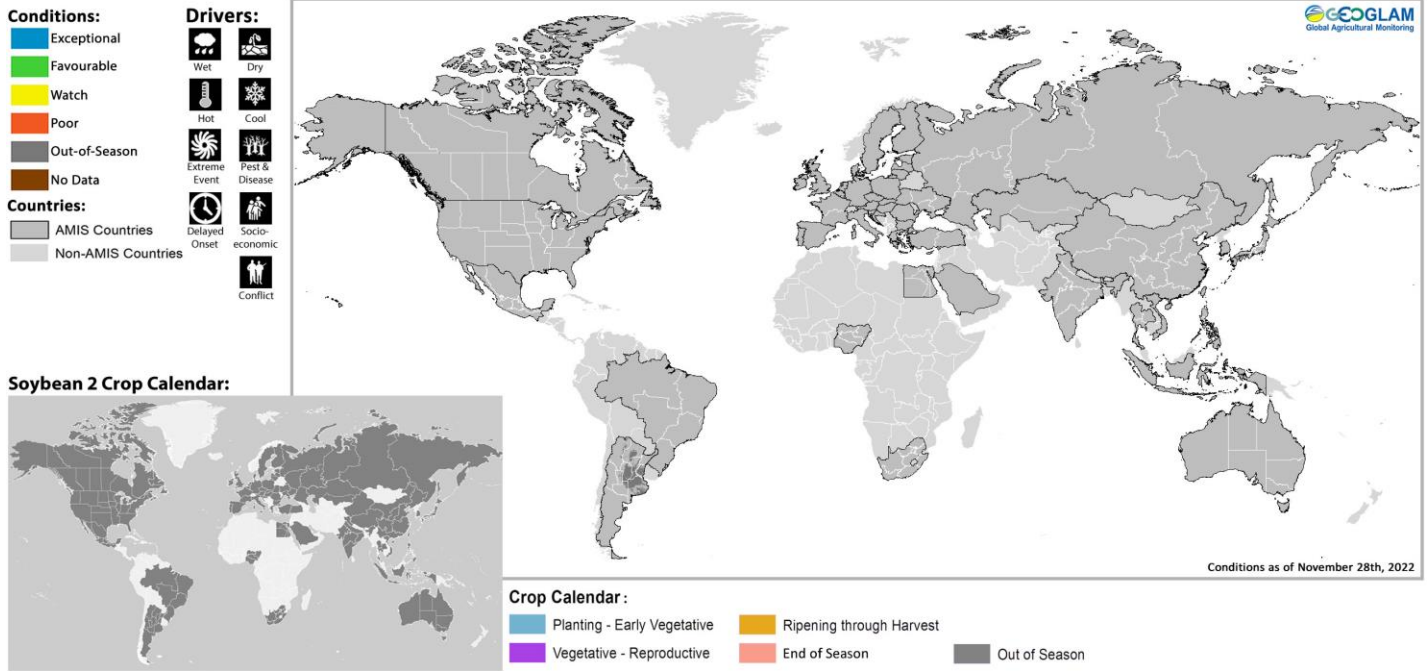


Soybean 1 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

\* Assessment based on information as of November 28th



## Soybean 2 Conditions for AMIS Countries



Soybean 2 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of November 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

\* Assessment based on information as of November 28th



Prepared by members of the GEOGLAM Community of Practice  
Coordinated by the University of Maryland with funding from NASA Harvest  
Climatic Influences by Climate Hazards Center of UC Santa Barbara

The Crop Monitor is a part of GEOGLAM, a GEO global initiative.

*Photo courtesy of Brian Barker*

<https://cropmonitor.org/>

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